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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/758,939	01/10/2001	Jennifer Lu	5075-0028	9598

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EXAMINER

MAGEE, CHRISTOPHER R

ART UNIT PAPER NUMBER

2653

DATE MAILED: 09/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/758,939

Applicant(s)

LU ET AL.

Examiner

Christopher R. Magee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 and 40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 and 40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-5, 7, 8, 10, 14, 16-19, 22-27 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hira et al. (hereinafter Hira) (US 5,910,864) in view of Hakey et al. (hereinafter Hakey) (US 5,776,660).

- Regarding claims 1-4, 14, 16, 22 and 40, Hira discloses a method for producing a transducer slider comprising:

- (a) coating a substrate with a radiation-sensitive layer [col. 17, lines 63-67];
- (b) imagewise exposing the radiation-sensitive layer to radiation according to an intensity pattern [col. 24, lines 5-17];
- (c) developing the image into the radiation-sensitive layer [col. 24, lines 5-17]; and
- (d) transferring the image into the substrate to form a transducer slider having a surface profile comprising a tapered edge or a rounded corner [Figs. 18A-D].

Hira does not disclose the intensity pattern enabling specific levels of removal of portions of the radiation sensitive layer corresponding to the specific intensity pattern used.

Regarding claims 5 and 6, Hira teaches the radiation-sensitive layer is a positive resist [col. 12, lines 21-23].

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Regarding claims 7 and 8, Hira discloses the radiation sensitive layer has a thickness of about 1 to 20 μm [col. 12, lines 36-38].

Regarding claim 10, Hira discloses the radiation has an ultraviolet wavelength [col. 20, lines 17-20].

Regarding claims 17-19, Hira discloses the etchant comprises an Argon based gas [col. 27, lines 45-49].

Regarding claims 23-27, Hira teaches the substrate comprises a ceramic material [col. 23, lines 33-39].

Haakey teaches creating specific features through the use of beam intensity variation [col. 6, line 60 to col. 7, line 30].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the image wise exposing method of Hira with a variation in beam intensity in order to remove portions of the radiation sensitive layer as taught by Haakey.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to provide the image wise exposing method of Hira with a variation in beam intensity in order to remove portions of the radiation sensitive layer as taught by Haakey in order to eliminate extraneous etching into a wafer [Haakey; col. 2, lines 8-12].

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2. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hira et al. (hereinafter Hira) (US 5,910,864) and Hakey et al. (hereinafter Hakey) (US 5,776,660) in view of Dickinson, Jr. (hereinafter Dickinson) (US 6,350,506).

- Regarding claim 9, Hira and Hakey disclose all the described features, *supra*, but do not teach or suggest the radiation is photonic.

Dickinson teaches exposing a surface to laser radiation that is monochromatic radiation, which results from photon stimulated emission, i.e., photonic radiation [col. 1, lines 40-47; col. 4, lines 55-63].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the radiation of Hira and Hakey with photonic radiation via a laser as taught by Dickinson.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to substitute the radiation of Hira and Hakey with photonic radiation via a laser as taught by Dickinson in order to maintain close dimensional control [Dickinson; col. 2, lines 25-28].

3. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hira et al. (hereinafter Hira) (US 5,910,864) and Hakey et al. (hereinafter Hakey) (US 5,776,660) in view of Block et al. (hereinafter Block) (US 6,033,766).

- Regarding claims 11-13, Hira and Hakey disclose all the described features, *supra*, but do not teach or suggest the intensity pattern being provided using a grayscale mask.

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Block teaches gray scale masks are useful in manufacturing various three dimensional mechanical, electrical and optical devices [col. 1, lines 19-34].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the intensity pattern of Hira and Hakey using a gray scale mask as taught by Block.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to provide the intensity pattern of Hira and Hakey using a gray scale mask as taught by Block in order to represent a three dimensional information, (e.g., a height profile or depth pattern) [Block; col. 1, lines 35-40].

4. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hira et al. (hereinafter Hira) (US 5,910,864) and Hakey et al. (hereinafter Hakey) (US 5,776,660) in view of Yoshida et al. (Yoshida) (US 5,331,495).

- Regarding claims 20 and 21, Hira and Hakey disclose all the described features, *supra*, but do not teach or suggest the etchant comprises a liquid.

Yoshida teaches a resulting mask pattern is subjected to wet treatment by a liquid etchant for patterning [col. 8, lines 64-67].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to expose the substrate of Hira and Hakey with a liquid etchant as taught by Yoshida.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to expose the substrate of Hira and Hakey with a liquid etchant as

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taught by Yoshida in order to achieve a stable lift off and with the least changes in the substrate profile [Yoshida; col. 5, line 66 to col. 6, line 2].

Response to Arguments

5. Applicant's arguments with respect to claims 1-27 and 40 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher R. Magee whose telephone number is (571) 272-7592. The examiner can normally be reached on M-F, 8: 00 am-5: 30 pm.

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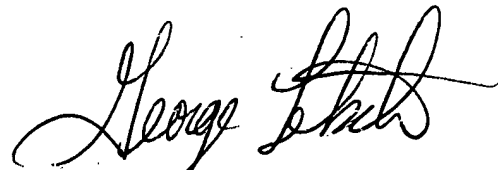
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Christopher R. Magee
Patent Examiner
Art Unit 2653

September 28, 2005
crm



GEORGE J. LETSCHER
PRIMARY EXAMINER